Claims

Claim 1. (Currently Amended) A jitter measurement system for a serial data stream having a high baud comprising:

means for down converting the serial data stream to a low rate serial stream; and

means for measuring jitter from the low rate serial stream, ~~maintaining~~ the jitter in UI (one UI equals one clock period) ~~where the jitter in UI is~~ being the same for the low rate serial stream as for the serial data stream.

Claim 2. (Original) The jitter measurement system as recited in claim 1 wherein the measuring means comprises:

means for recovering a low rate clock from the low rate serial stream; and

means for measuring the jitter from the low rate clock.

Claim 3. (Original) The jitter measurement system as recited in claim 1 wherein the measuring means comprises:

means for recovering a low rate NRZ signal from the low rate serial stream; and

means for measuring the jitter from the low rate NRZ signal.

Claim 4. (Original) The jitter measurement system as recited in claim 3 wherein the recovering means comprises:

means for generating a phase signal indicating when the low rate serial stream provides meaningful phase information; and

means for clocking the low rate serial stream as a function of the phase signal with a clocking signal derived from the low rate serial stream to produce the low rate NRZ signal.

Claim 5. (Original) The jitter measurement system as recited in claim 4 wherein the generating means comprises:

means for detecting an envelope of the low rate serial stream; and

means for comparing the envelope with a threshold to produce the phase signal.

Claim 6. (Original) The jitter measurement system as recited in claim 5 wherein the comparing means comprises a comparator having the threshold and the envelope as inputs and providing the phase signal as an output.

Claim 7. (Previously Amended) The jitter measurement system as recited in claim 4 wherein the clocking means comprises:

means for converting the low rate serial stream to the clocking signal; and

means for toggling between two states in response to the clocking signal when the phase signal indicates meaningful phase information while holding a last state when the phase signal indicates no meaningful phase information to produce the low rate NRZ signal.

Claim 8. (Original) The jitter measurement system as recited in claim 7 wherein the converting means comprises means for squaring up the low rate serial stream to produce the clocking signal.

Claim 9. (Original) The jitter measurement system as recited in claim 8 wherein the squaring up means comprises means for comparing the low rate serial stream with a threshold at a zero crossing level for the low rate serial stream to produce the clocking signal.

Claim 10. (Original) The jitter measurement system as recited in claim 7 wherein the toggling means comprises a toggle/hold flip-flop having the phase signal as a data input and the clocking signal as a clock input and having the low rate NRZ signal as an output.

Claim 11. (Original) The jitter measurement system as recited in claim 1 wherein the measuring means comprises:

means for digitizing the lower rate serial stream to produce a sampled serial stream; and

means for processing the sampled serial stream to measure jitter.

Claim 12. (Previously Amended) The jitter measurement system as recited in any one of claims 1-11 further comprising means for converting an NRZ serial data stream to an RZ serial data stream, the RZ serial data stream being the serial data stream input to the down converting means.

Claim 13. (Previously Amended) The jitter measurement system as recited in claim 12 wherein the converting means comprises:

means for delaying the serial data stream to produce a delayed serial data stream; and

means for combining the delayed serial data stream and the serial data stream to convert the NRZ serial data stream to the RZ serial data stream.

Claim 14. (Original) The jitter measurement system as recited in claim 13 wherein the delaying means comprises a delay circuit having the serial data stream as an input and the delayed serial data stream as an output, the delay circuit providing a delay equal to approximately one-half of a period of the high baud rate.

Claim 15. (Original) The jitter measurement system as recited in claim 13 wherein the combining means comprises an exclusive-OR gate having the serial data stream and the delayed serial data stream as inputs and having the serial data stream in the RZ format as an output.

Claim 16. (Original) The jitter measurement system as recited in claim 15 wherein the delaying means comprises a delay circuit having the serial data stream as an input and the delayed serial data stream as an output, the delay circuit providing a delay equal to approximately one-half of a period of the high baud rate.

Claim 17. (Original) The jitter measurement system as recited in any one of claims 1-11 wherein the down converting means comprises:

means for mixing the serial data stream with a local oscillator signal having a frequency near the high baud to provide a spectrum of mixed serial data streams; and

means for selecting the low rate serial stream from the spectrum of mixed serial data streams.

Claim 18. (Original) The jitter measurement system as recited in claim 17 wherein the mixing means comprises a mixer having the serial data stream and the local oscillator signal as inputs and having the spectrum of mixed serial data streams as an output.

Claim 19. (Original) The jitter measurement system as recited in claim 17 wherein the selecting means comprises an intermediate frequency bandpass filter having the spectrum of mixed serial data streams as an input and the low rate serial stream as an output.

Claim 20. (Original) The jitter measurement system as recited in claim 19 wherein the mixing means comprises a mixer having the serial data stream and the local oscillator signal as inputs and having the spectrum of mixed serial data streams as an output.

Claim 21. (Original) The jitter measurement system as recited in any one of claims 1-11 further comprising means for anti-alias filtering the serial data stream to produce an anti-aliased serial data stream for input to the down converting means.

Claim 22. (Currently Amended) The jitter measurement system as recited in claim 21 wherein the anti-alias ~~filterering~~ filtering means comprises a radio-frequency filter having the serial data stream as an input and the anti-aliased serial data stream as an output, the radio-frequency filter being configured to filter out an amplitude-modulation sideband that otherwise aliases on top of desired sidebands in the down converting means.

Claim 23. (Original) The jitter measurement system as recited in claim 17 wherein the frequency of the local oscillator signal is tunable to adjust the jitter measurement system to accommodate a range of high bauds for the serial data stream.

Claim 24. (Original) The jitter measurement system as recited in claim 23 wherein a center frequency for the selecting means is tunable to adjust the jitter measurement system to accommodate a range of high baud rates for the serial data stream.

Claim 25. (Original) The jitter measurement system as recited in claim 17 wherein a center frequency for the selecting means is tunable to adjust the jitter measurement system to accommodate a range of high baud rates for the serial data stream.

Claim 25. (New) An improved jitter measurement system for a high baud serial data stream of the type having means for measuring jitter of an input serial data stream wherein the improvement comprises means for down converting the high baud serial data stream to a low baud serial data stream such that the jitter in unit intervals is the same for the high baud serial data stream and the low baud serial data stream, the low baud serial data stream being the input serial data stream for the measuring means.